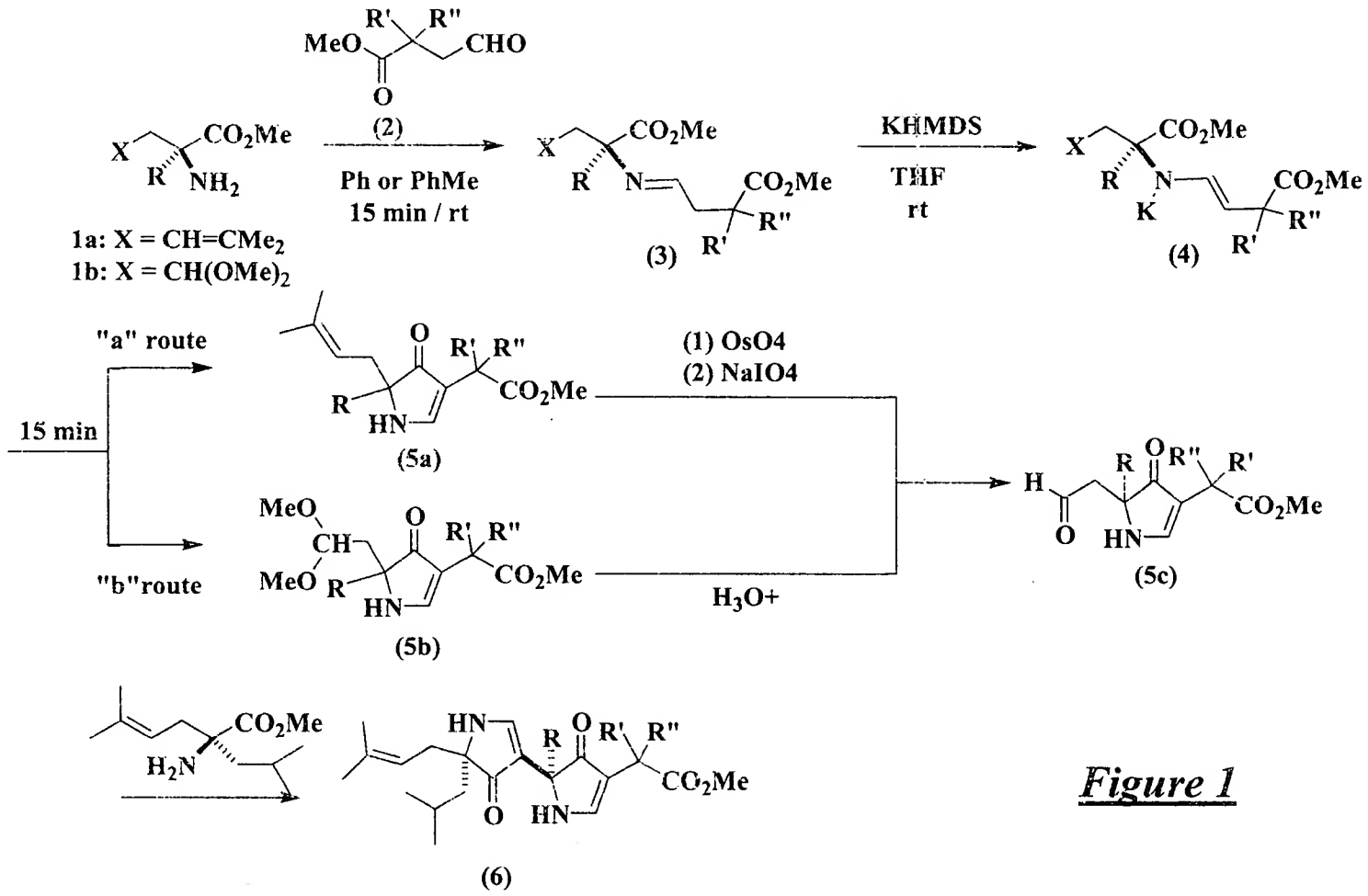


Figure 1

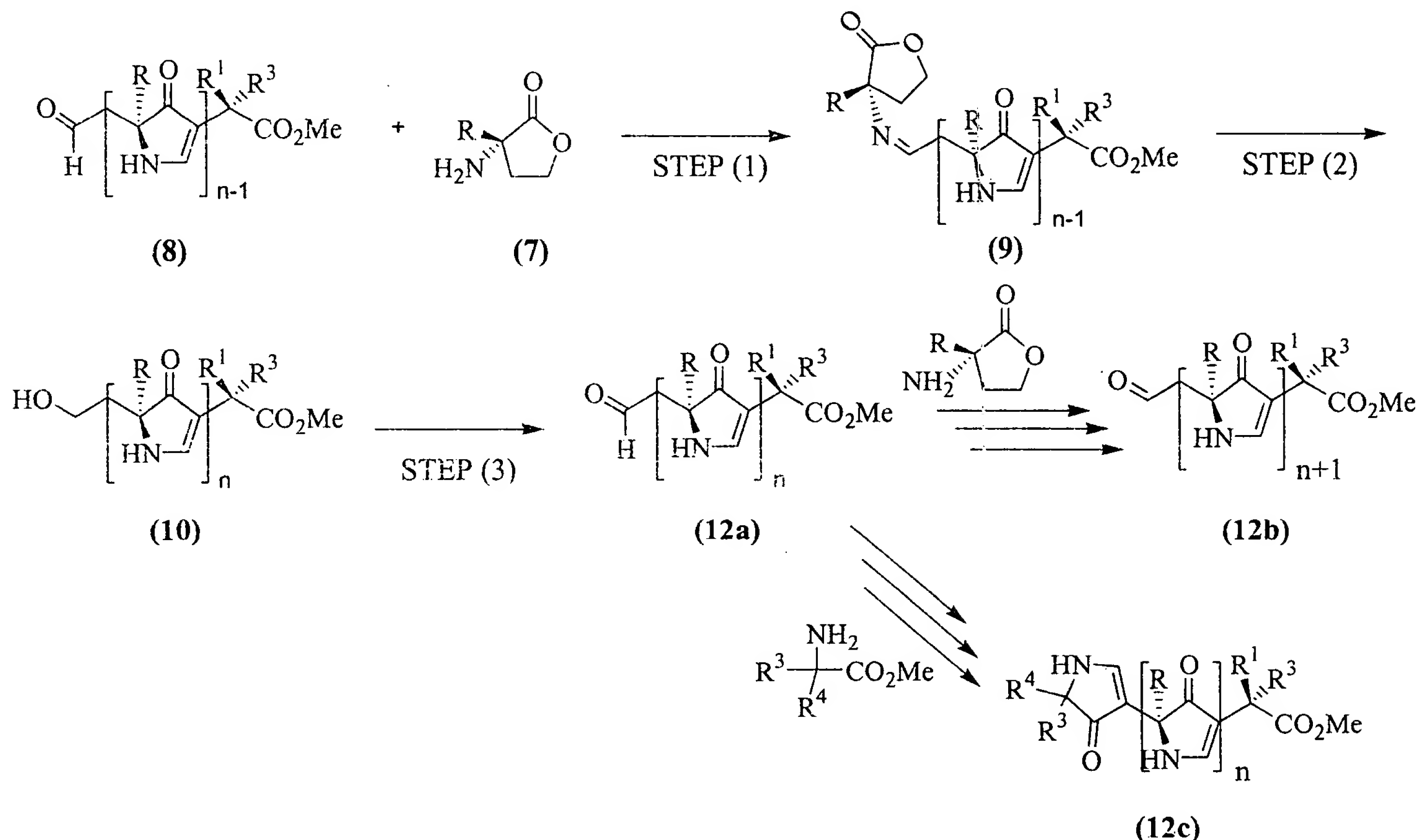
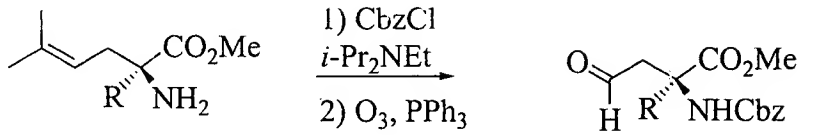
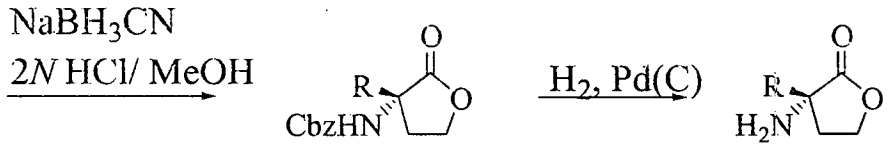


Figure 2



(-)-**13a** R = $CH(CH_3)_2$,
(-)-**13b** R = $CH_2CH(CH_3)_2$

(+)-**14a** (88%)
(+)-**14b** (96%)



(-)-**15a** (78%)
(-)-**15b** (80%)

(-)-**7a** (83%)
(-)-**7b** (84%)

Figure 3

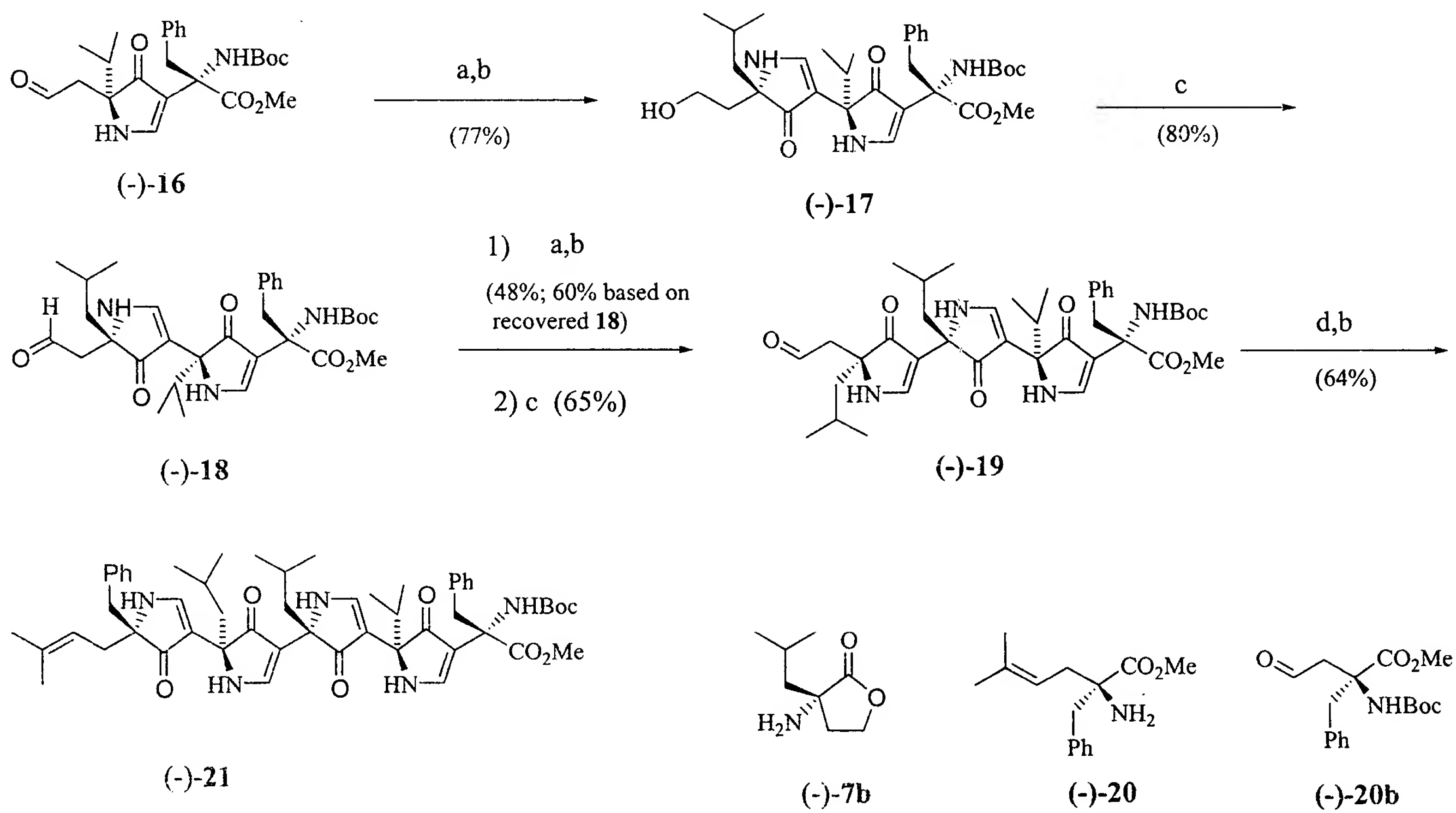
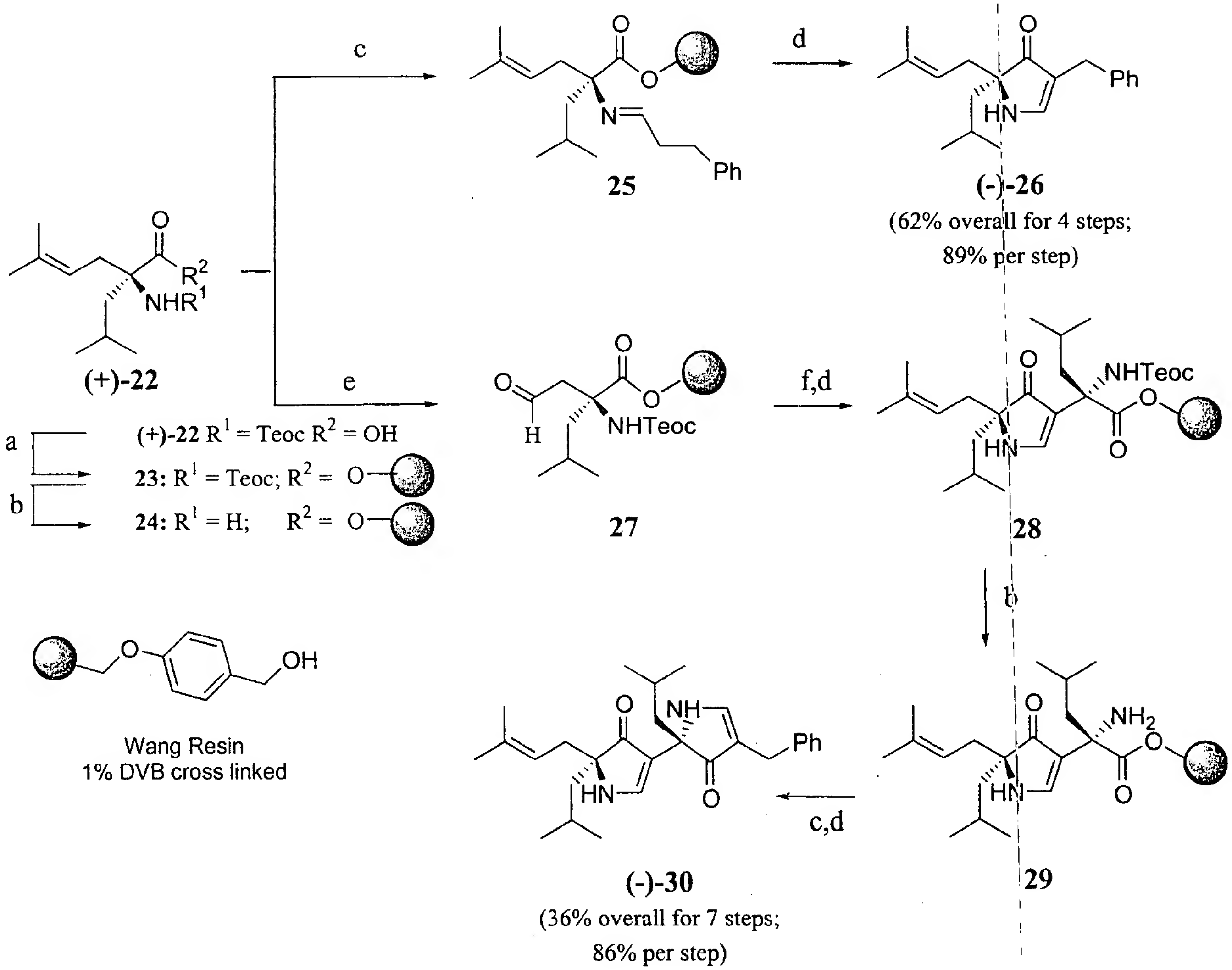


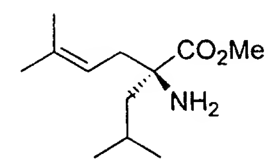
Figure 4

(a) (-)-**7b**, $(MeO)_3CH$/THF; (b) 18-c-6/KHMDS; (c) $(COCl)_2$, DMSO, DBU; (d) (-)-**20**, $(MeO)_3CH$/THF

Figure 5



(a) Wang resin, DEAD, PP[illegible]
(b) TBAF
(c) $PHCH_2CH_2CHO$ $CH(OMe)_3/THF$ two treatments
(d) KDHMS;
(e) O_3, PPh_3
(f) **(31)**, $CH(OMe)_3/THF$ two treatments;



(-)-31

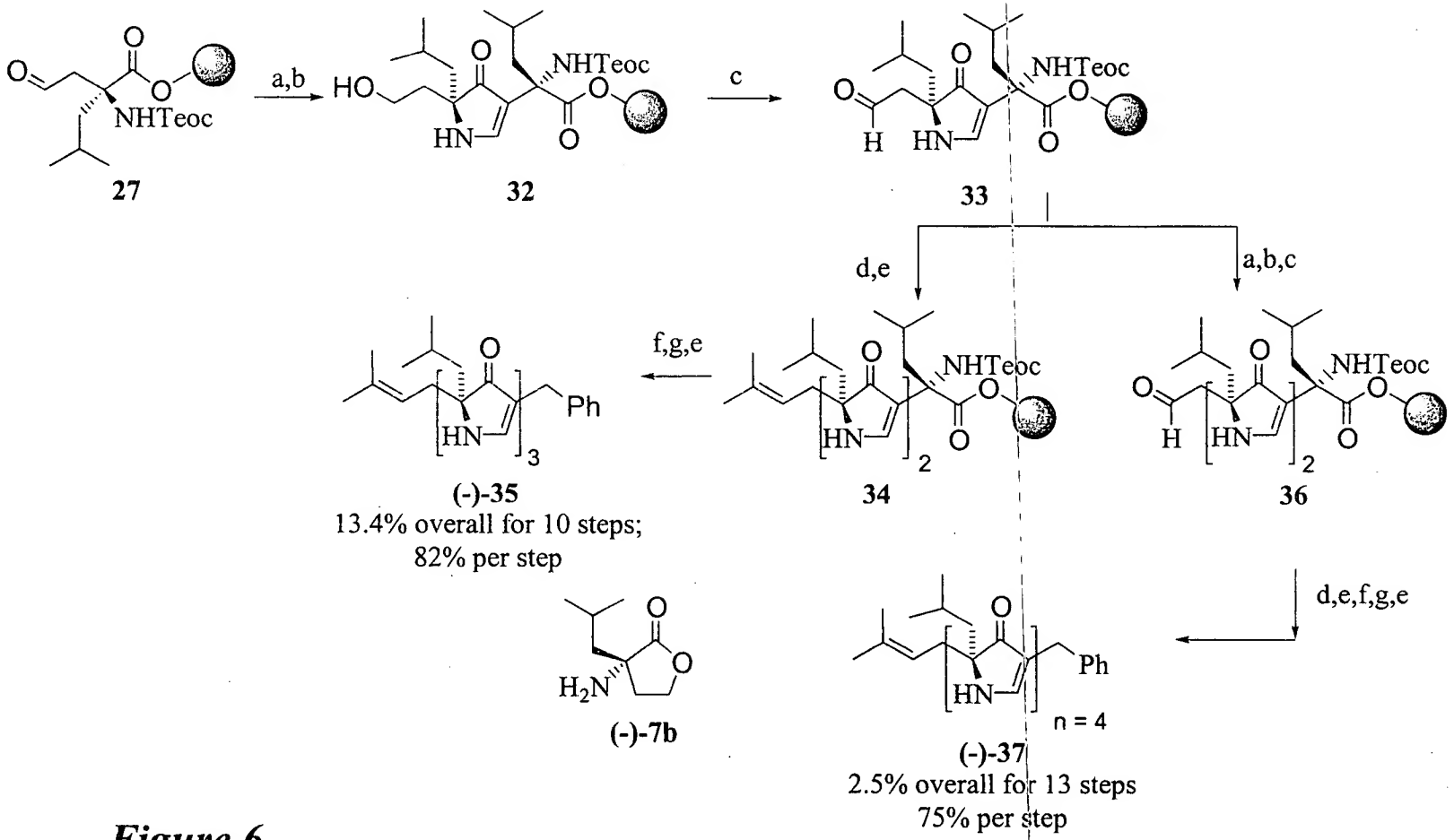


Figure 6

(a) (-)-**7b**, $(MeO)_3CH$/THF, 2 treatments; (b) KHDMS/18-c-6; (c) DMSO, $(COCl)_2$, DBU; (d) **31**, $(MeO)_3CH$/ THF, 2 treatments; (e) KHMDS; (f) CsF/DMF, TBAF; (g)$PhCH_2CH_2CHO$, $(MeO)_3CH$/THF, 2 treatments